Commerce, Justice, Science, and Related Agencies
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Written testimony by
Marion C. Blakey, president and CEO
Aerospace Industries Association

Introduction

Good afternoon Chairman Mollohan, Ranking Member Wolf and distinguished members of the committee. Thank you for the opportunity to testify before this committee. AIA is pleased with the proposed increase to the Fiscal Year 2011 budget request for both NASA and NOAA. In this fiscal environment an increase in funding represents a true commitment to – and importance placed upon – our civil space missions.

The Aerospace Industries Association (AIA) represents nearly 300 manufacturing companies in an industry with over 644,000 high-wage, highly skilled aerospace employees across the three sectors: civil aviation, space systems and national defense. This includes over 140,000 workers who make the satellites, space sensors, spacecraft, launch vehicles and ground support systems employed by NASA, DoD, NOAA, NRO and other civil, military and intelligence space efforts. Our member companies export 40 percent of their total output, and we routinely post the nation's largest manufacturing trade surplus, which was over $56 billion in 2009. Aerospace indirectly supports 30,000 suppliers and 2 million middle class jobs across all 50 states. The aerospace industry continues to look to the future, investing heavily in research and development, spending more than $100 billion over the last 15 years.

AIA appreciates the efforts of the Congress and this subcommittee to keep our civil space programs healthy. Over several decades space technologies have increasingly become a part of our daily lives with virtually every part of the U.S. economy touched by their applications.

Additionally, our space programs remain an excellent source of inspiration for our youth to study science, technology, engineering and mathematics and to enter our aerospace workforce on which much of our nation's transportation, security and economic infrastructure depend.

The current budget request for NOAA provides $5.5 billion, an increase of $700 million. A substantial portion of this increase is for the procurement of much-needed weather and climate study satellite systems. AIA is extremely pleased with this increase and recommends the request be fully funded.

We are also encouraged that NASA's proposal extends the International Space Station through at least 2020, funds valuable Earth and space science missions, increases aeronautics funding, renews technology development and innovation and promotes commercial spaceflight.

Each of these represent crucial missions that have not always enjoyed the level of investment needed to sustain a robust civil space and aeronautics program.

There are two particular areas within NASA's budget that warrant further consideration; these include the future of U.S. human spaceflight and our aeronautics research programs.

Human Spaceflight Should Be Treated as a National Priority

As Congress debates the extent to which the U.S. will rely on our commercial space providers for cargo and human carriage into space, it will be essential that NASA receive the full $19 billion proposed in the President's request. Even so, the budget falls short of needed resources. The Review of U.S. Human Spaceflight Plans Committee (also known as the Augustine Committee) states that "meaningful human exploration is possible under a less-constrained budget," and recommended an increase of approximately $3 billion annually to do so.[1]

The Committee noted that, "perhaps the greatest contributor to risk in the space program, both human and financial, is seeking to accomplish extraordinarily difficult tasks with resources inconsistent with the demands of those tasks. This has undoubtedly been the greatest management challenge faced by NASA in recent decades – even given the magnitude of technological challenges it has confronted."[2]

Unfortunately, the current fiscal environment is unlikely to support such an increase to NASA's overall top line for FY2011. It is therefore important to preserve the funding levels in the proposed request. We cannot risk whittling away these resources because of budgetary pressures elsewhere within the U.S. government. In future years, it will be absolutely critical that NASA receive the funds it needs to carry out all of its given missions.

In addition to budgetary concerns, other considerations must be made as NASA's final budget is shaped and future policy direction implemented.

The proposed cancellation of the Constellation program at the same time as the planned retirement of the Space Shuttle would cause residual impacts to the space industrial base and highly-trained space workforce in both private and public sectors. Such change would bring significant disruptions to our space supplier base, impacting the people that also designs, develops and supports our spacecraft, satellites, launch systems and supporting infrastructure for our commercial and national security space systems. Interruptions or cancellations negatively impact large companies and can be catastrophic to smaller firms – often the only people with the unique abilities to produce small but critical components on which huge portions of our economy, infrastructure and security depend. For example, only one firm in the U.S. produces ammonium perchlorate which is used in solid rocket propellants such as the space shuttle solid rocket motors, other space launch and military purposes.

[1] Seeking a Human Spaceflight Program Worthy of a Great Nation," Review of U.S. Human Spaceflight Plans Committee, October 2009, p. 17 http://www.nasa.gov/pdf/396093main_HSF_Cmte_FinalReport.pdf
[2] Ibid., p. 111.

Investment in commercial space will no-doubt create new opportunities, yet the disruptions of retired and cancelled programs will nevertheless affect the unique and skilled workforce that drives the space industry. Aerospace talent lost to other industries may be unrecoverable; new workers may take years to train. Additionally, if we lose certain facilities that manufacture high-tech technologies, it may take years and additional resources to bring them back.

NASA is linked to the health of our industrial base. We must view these jobs as a national resource critical to our nation's technological capability and our national security.

To rectify this in the short term, Congress should ensure that plans and necessary funding directed to help effectively transition both the NASA civil and contractor workforces into the proposed programs. Over the longer term, there should be mechanisms in place to assess the current state of the industrial base to ensure that future programs will have the proper skill sets in place when needed. It is critical to also define a specific strategy that sets clear goals and timelines for human exploration beyond low Earth orbit. Industry must be brought in early as an active partner as plans are made.

Additionally, it is of the utmost importance for the U.S. government to develop a long-term space strategy that takes into account both civil and national security space requirements for the future. Specifically, it is essential the strategy include U.S. plans for human spaceflight beyond low Earth orbit. Any national space strategy should identify what space related skills and capabilities we must maintain as a nation, and be tied to the budget and resources so that our national goals are driven by our leadership and vision. Better coordination and strategy would not only help our government make more effective use of limited resources, it would help industry strengthen its own efforts to respond to government needs and attract and retain the best and brightest.

If the U.S. fails to direct a national vision and strategy for space, America could risk a future where we lack the workforce and industrial capability needed to maintain U.S. leadership and competitiveness in space.

NASA's Aeronautics Research Important to NextGen

Historically, AIA has expressed concern over the lack of focus on NextGen-related R&D. While the NASA Aeronautics Research and Development Mission Directorate (ARMD) is uniquely positioned to undertake much crucial research and development work, ARMD has struggled to allocate sufficient resources necessary to keep pace with NextGen R&D requirements. For aviation to continue its dramatic decrease in environmental impact, it is critical that we hasten application of NextGen technology and operational improvements that lower emissions. The advancement of NextGen relies on federal R&D, generally with NASA doing work that is then directed to FAA or industry for further refinement or application.

AIA is encouraged by the Administration's acknowledgement of the importance of Aviation Aeronautics Research and Development by increasing the budget by 12 percent over President's FY2010 request. Specifically, AIA urges Congress to adopt the FY2011 request, including essential investments in NASA's environmentally responsible aircraft, verification and validation of complex software-based systems, and Unmanned Aerial Systems (UAS) operational and safety research.

Moving forward, AIA is optimistic about the emphasis placed on advanced aeronautics in the FY2011 budget request. However, concern remains with regard to out-year funding for NASA ARMD and its potential detriment to NextGen advancement. Dating back to the early days of NASA Aeronautics R&D, ARMD has been responsible for revolutionary safety and efficiency initiatives that have saved countless lives. It is in this tradition of excellence that this must continue and requires Committee support for the FY2011 NASA Appropriation.

STEM Education More Important than Ever

Developing the aerospace workforce of the future is a top issue for our industry. The state of education for our young people, however, is in peril, including poor preparation for Science, Technology, Engineering and Mathematics, also known as STEM fields; low graduation rates of students in those fields, especially when compared to other nations, and a lack of interest in STEM fields overall.

Currently, the U.S. annually graduates just 74,000 engineers – covering all fields in the discipline. Further, many of these students are foreign nationals who return home shortly after graduating – which lowers the number of new domestically employable engineers under 60,000.[3] By comparison, India and China respectively graduate six and ten times more engineering students each year.[4] If this continues, the U.S. runs a real risk of losing its skilled engineering edge over other nations.

The latest national test scores show that, in math, fourth graders are 62 percent below proficient and eighth graders are 69 percent below proficient. In science, fourth graders are 68 percent below proficient, while eighth graders are 73 percent below proficient.[5]

In a study done by Raytheon, most middle school students said they would rather do one of the following instead of their math homework: clean their room, eat their vegetables, go to the dentist or take out the garbage.

To that end we are very supportive of efforts to improve STEM education. We ask that your committee continue to support, fund, and – where possible – increase funding for the various STEM education initiatives within your agencies of jurisdiction. For example, Rep. Suzanne Kosmas (D-FL) has drafted a bill that aims to incentivize displaced aerospace workers to pursue second careers as STEM educators allowing students the opportunity to be taught by teachers with first-hand knowledge of our nation's space program.

To help bring enthusiasm for the aerospace industry, AIA is being innovative. We run the Team America Rocketry Challenge, or TARC, for middle and high school students.

TARC starts off with a regional competition, with students teamed in many cases with real rocket scientists, with qualifiers coming to the Washington, D.C. region for the national

[3] 2008 American Society for Engineering Education, "Engineering by the Numbers."
[4] 2005 National Academies: Rising Above the Gathering Storm.
[5] 2007 National Assessment of Education Progress, U.S. Dept. of Ed.

competition. Their challenge requires them to achieve a designated flight time and altitude all while safely returning a raw egg payload.

We invite all of you to our competition on May 15, 2010 in The Plains, Virginia. Representatives Wolf, Schiff, Visclosky, Culberson and Aderholt might be particularly interested this year as each of you have teams from your district competing.

Conclusion

Over the past 50 years, space systems and technologies have increasingly become a critical part of our nation's economic, scientific and national security capabilities. Our space capabilities are a source of national pride and an investment in the science and R&D needed to maintain U.S. global leadership. The value of this investment has not been lost on others. Many other nations are employing space to support their infrastructure, to increase their technological prowess, and to demonstrate that they are a modern; or rapidly modernizing. Our leadership in space is no longer assured.

Investments made to NASA, NOAA, and STEM education are investments made to our nation here on Earth. It is essential that funding remains stable and robust to ensure a strong economy, advanced technology growth, and to protect the welfare of our citizens.

I thank the committee for their time and attention and would be happy to answer any questions.